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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/591,623	11/29/2006	Stefan Brand	2004DE304	3302
25255 7590 02/05/2010 CLARIANT CORPORATION INTELLECTUAL PROPERTY DEPARTMENT 4000 MONROE ROAD CHARLOTTE, NC 28205				
EXAMINER LOEWE, ROBERT S				
ART UNIT		PAPER NUMBER		
1796				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/591,623

Applicant(s)

BRAND ET AL.

Examiner

ROBERT LOEWE

Art Unit

1796

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 November 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SI/200)
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date: _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____
- Paper No(s)/Mail Date 2/20/07, 4/13/07, 8/1/07

DETAILED ACTION

Claim Interpretation

The limitation "composed of" will be interpreted in claim 1 as "consisting of". See MPEP 2111.03. Instant claim 23 is written using the transitional phrase "consisting essentially of" and instant claim 27 is written using the transitional phrase "comprising". Instant claims 1, 23 and 27 are otherwise identical with the exception of the transitional language used. While Instant claims 1 and 23 are not open-ended claims, the ingredients that make up the coating, that is base coat (a) and protective coat (b) are not restricted. In other words, a prior art teaching which teaches a perhydropolysilazane base coat and a perhydropolysilazane protective coat comprising titanium dioxide will satisfy the limitations of instant claims 1 and 23 even if the base coat and/or the protective coat have additional ingredients present.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later

invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 2, 4, 5, 10-13, 16, 23, 24, 27 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuda et al. (JP 2001-328201), further in view of Higuchi et al. (US 2002/0015851). For convenience, an English language machine translation will be relied upon for JP 2001-328201; the citations below being made from the machine translation.

Claims 1, 2, 4, 5, 12, 13, 23, 24, 27 and 28: Matsuda et al. teaches a photocatalyst coating material which has a foundation layer/base layer which comprises a metallic oxide particle and a binding material, which may be polysilazane (paragraphs 0020 and 0023). Matsuda et al. further teaches a photocatalyst layer which is applied to the foundation layer, said photocatalyst layer being comprised of anatase titanium oxide (paragraph 0027) having a particle size of 4-10 nm (paragraph 0030) and a binder, which may be polysilazane (paragraph 0031). No other protective layers are taught, satisfying that the coating material consists of a base layer and a protective layer only. Matsuda et al. further teaches that such coatings can be applied to metal substrates (paragraphs 0016-0017).

While Matsuda et al. teaches polysilazanes may be used as the binding material for the base coat and photocatalyst layers, Matsuda et al. does not explicitly teach that the polysilazane is a perhydropolysilazane having the molecular weight requirements of instant claim 1. However, Higuchi et al. teaches polysilazane-based coating compositions in which the polysilazane is preferably a perhydropolysilazane having a molecular weight range of between 200 and 50,000 (abstract and paragraph 0020). Matsuda et al. and Higuchi et al. are combinable because they are from the same field of endeavor, namely, coating compositions based on

polysilazanes. At the time of the invention, a person having ordinary skill in the art would have found it obvious to employ the perhydropolysilazanes as taught by Higuchi et al. into the coating compositions of Matsuda et al. and would have been motivated to do so since Higuchi et al. teaches that employment of perhydropolysilazane affords good hardness and scratch resistance, and mitigation of cracks, which is a feature desired by Matsuda et al. (paragraph 0040). Further, Higuchi et al. teaches that the molecular weight should be between 200 and 50,000 since at molecular weights below 200, a uniform cured material is difficult and if the molecular weight exceeds 50,000, the polysilazane suffers from poor solubility (paragraph 0020).

Matsuda et al. does not explicitly teach the thickness of the photocatalyst layer. However, arrival at the claimed thickness of the photocatalyst protective coat required by claims 2, 12 and 13 is believed to be obvious based on the teachings of Higuchi et al. Higuchi et al. teaches that the preferred thickness of the polysilazane protective layers is preferably from 0.1 to 10 microns (paragraph 0091). At the time of the invention, a person having ordinary skill in the art would have found it obvious to have prepared the photocatalytic protective layers as taught by Matsuda et al. in the thickness ranges as taught by Higuchi et al. because Higuchi et al. teaches that if the thickness of the polysilazane protective layer is more than 10 microns, cracks may form (paragraph 0091).

Claims 10, 11 and 16: Matsuda et al. teaches coating compositions as claimed in instant claim 1. While Matsuda et al. does not explicitly teach applying such coating compositions to aluminum rims, instant claims 1, 10, 11 and 16 are directed to a future intended use; therefore, the compositions taught by Matsuda et al. need only be capable of being applied to aluminum rims.

Claims 6-9 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuda et al. (JP 2001-328201), further in view of Higuchi et al. (US 2002/0015851). For convenience, an English language machine translation will be relied upon for JP 2001-328201; the citations below being made from the machine translation.

Claims 6, 8, 9 and 17: Matsuda et al. teaches a method for preparing the coatings taught therein by first applying a foundation layer which consists of applying a solution of polysilazane and an oxidation catalyst to a substrate followed by hardening/curing at ambient temperatures up to 100 degrees C (paragraph 0023). Matsuda et al. further teaches applying the titanium oxide photocatalyst solution containing a polysilazane and a catalyst to the foundation layer and hardening/curing at ambient temperatures up to 100 degrees C (paragraph 0031). Matsuda et al. further teaches that such coatings can be applied to metal substrates (paragraphs 0016-0017).

While Matsuda et al. teaches polysilazanes may be used as the binding material for the base coat and photocatalyst layers, Matsuda et al. does not explicitly teach that the polysilazane is a perhydropolysilazane having the molecular weight requirements of instant claim 1. However, Higuchi et al. teaches polysilazane-based coating compositions in which the polysilazane is preferably a perhydropolysilazane having a molecular weight range of between 200 and 50,000 (abstract and paragraph 0020). Matsuda et al. and Higuchi et al. are combinable because they are from the same field of endeavor, namely, coating compositions based on polysilazanes. At the time of the invention, a person having ordinary skill in the art would have found it obvious to employ the perhydropolysilazanes as taught by Higuchi et al. into the coating compositions of Matsuda et al. and would have been motivated to do so since Higuchi et al.

teaches that employment of perhydropolysilazane affords good hardness and scratch resistance, and mitigation of cracks, which is a feature desired by Matsuda et al. (paragraph 0040). Further, Higuchi et al. teaches that the molecular weight should be between 200 and 50,000 since at molecular weights below 200, a uniform cured material is difficult and if the molecular weight exceeds 50,000, the polysilazane suffers from poor solubility (paragraph 0020).

Claim 7: Matsuda et al. teaches the process of instant claim 6, as described above. While Matsuda et al. does not explicitly teach a concentration of the polysilazane in solution of from 0.01 to 40% by weight as required by instant claim 7, such a concentration would have been obvious to a person having ordinary skill in the art based on the teachings of Higuchi et al. Higuchi et al. teaches that the polysilazane concentration should be between 0.5 to 80% by mass and exemplifies 20% by weight. For the simple fact that Higuchi et al. prepares coating solutions for the same end uses, such a concentration range would have been obvious as well for the coating compositions taught by Matsuda et al. Further, extremely low concentrations would not be expected to afford reasonable film thicknesses with uniform coverage, and extremely high concentrations might not be too viscous for coating.

Claims 3, 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuda et al. (JP 2001-328201), in view of Higuchi et al. (US 2002/0015851), as applied to claim 1, further in view of Nagata et al. (JP-11-227091). For convenience, English language machine translations will be relied upon for both JP 2001-328201 and JP-11-227091; the citations below being made from the machine translation.

Matsuda et al. in view of Higuchi et al. collectively render obvious the limitations of instant claim 1, as described above. While Matsuda et al. does not explicitly teach the ratio of polysilazane to titanium dioxide as required by instant claims 3, 14 and 15, such a ratio is believed to be obvious given the teachings of Nagata et al. Nagata et al. teaches that the ratio of titanium dioxide to polysilazane is preferably 1:1 to 5:1, which satisfies all of the ratios of instant claims 3, 14 and 15 (paragraph 0020). Matsuda et al. and Nagata et al. are combinable because they are from the same field of endeavor, namely, photocatalytic polysilazane-based coatings. At the time of the invention, a person having ordinary skill in the art would prepared the photocatalytic layers as taught by Matsuda et al. using the titanium dioxide/polysilazane ratios as taught by Nagata et al. and would have been motivated to do so since Nagata et al. teaches that if the ratio is lower than 1:1, the photocatalyst will be buried in the coating, mitigating its photocatalytic activity and if the ratio exceeds 10:1, the polysilazane would be ineffective as a binder (paragraph 0020).

Claims 18, 21, 25 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuda et al. (JP 2001-328201) in view of Higuchi et al. (US 2002/0015851) as applied to claims 1, 6, 23 and 27, further in view of Suzuki (US 2003/0164113). For convenience, an English language machine translation will be relied upon for JP 2001-328201.

Matsuda et al. in view of Higuchi et al. collectively render obvious the limitations of instant claim 1, as described above. Matsuda et al. does not explicitly teach aluminum rims which are coated with the coating compositions taught therein. However, given the teachings of Suzuki, such an end use would have been obvious to a person having ordinary skill in the art.

Suzuki teaches polysilazane-based coating solutions which are coated on various substrates including automobile wheels (paragraphs 0036-0037). It is clear to a person having ordinary skill in the art that this includes automobile rims. Matsuda et al. and Suzuki are combinable because they are from the same field of endeavor, namely, polysilazane-based coating solutions. At the time of the invention, a person having ordinary skill in the art would have found it obvious to apply the coating solutions as taught by Matsuda et al. onto automobile wheels (which includes automobile rims) as taught by Suzuki and would have been motivated to do so since Suzuki teaches that such surfaces would benefit from having antifouling coatings applied thereto. The coating solutions of Matsuda et al. are designed to meet such criteria; further, Matsuda et al. is not very critical regarding the substrates which the coating solutions may be applied, therefore, a person having ordinary skill in the art would not be exclusive in choosing various substrates in which to test the photocatalytic coating compositions taught by Matsuda et al.

Claims 19, 22, 26 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuda et al. (JP 2001-328201) in view of Higuchi et al. (US 2002/0015851) as applied to claims 18, 21, 25 and 29, further in view of Suzuki (US 2003/0164113). For convenience, an English language machine translation will be relied upon for JP 2001-328201.

Matsuda et al. in view of Higuchi et al., further in view of Suzuki collectively render obvious wheel rims which are coated with the coating compositions of instant claims 1, 6, 23 and 27. While Suzuki does not teach aluminum rims, Official notice is taken that wheels and wheel rims are known to be made out of aluminum. In the instant case, with the motivation to apply the coating solutions of Matsuda et al. to automobile wheels (which clearly excludes tires given

the desired properties of both Matsuda et al. and Suzuki), the selection of aluminum wheels/rims as the substrate would have been obvious to a person having ordinary skill in the art since aluminum wheels/rims are well known and commercially available materials which wheels/rims are made of. The selection of a known material based on its suitability for its intended use supported a *prima facie* obviousness determination in *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945). See MPEP 2144.07.

Relevant Art Cited

Additional prior art documents which are relevant to Applicants invention can be found on the attached PTO-892 form.

Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert Loewe whose telephone number is (571) 270-3298. The examiner can normally be reached on Monday through Friday from 5:30 AM to 3:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on (571) 272-1302. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR

Art Unit: 1796

system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/R. L./

Examiner, Art Unit 1796

27-Jan-10

/RANDY GULAKOWSKI/

Supervisory Patent Examiner, Art Unit 1796